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NASA Langley Licenses Laser Technology

Aerospace technology originally developed for studying Earth's atmosphere from space has been licensed to a U.S. company to increase the reliability of lasers used for everything from medical applications and product fabrication to detection of gas leaks.

NASA Langley Research Center, Hampton, Va., has licensed the technology to Big Sky Laser Technologies, Inc., Bozeman, Mont.

As more and more laser users are taking lasers out of the lab and into industrial applications, NASA "laser protection circuit" technology promises to allow lasers to perform more reliably in real-world applications. Expected applications include monitoring pollution and tracking its sources; detection of methane and other hazardous gas leaks; use in the offices of dermatologists, medical doctors, and plastic surgeons; use in factories for fabrication, marking and laser cleaning; and for a world of applications that have not been thought of yet.

"These applications will better the lives of people by making the world cleaner and safer, and by making products cheaper and better," said George E. Lockard of the NASA Langley Remote Sensing Technology Branch.

Lockard invented the patented technology as part of his work on developing a high energy laser for measuring atmospheric water vapor, clouds and aerosols. The high energy laser had a propensity to damage itself, so, with recommendations from branch head James C. Barnes, Lockard designed the laser protection circuit.

Lasers equipped with this technology will shut down automatically when the circuit detects a condition which can lead to self-destructive energy pulses, as when significant laser energy is reflected back into the device. This condition can cause serious damage to optical components and valuable downtime for repair.

Big Sky is modifying an existing line of miniaturized lasers with the technology.

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Expected scientific applications for the modified laser include LIDAR, remote sensing, eyesafe illumination, ablation, laser marking, and laser splitting of molecules for observation of light emission.

When Big Sky engineers determined that NASA Langley's laser protection circuit technology would be of value in their product lines, they contacted NASA-MSU TechLink, a technology transfer and commercialization partnership between NASA and Montana State University. TechLink facilitated the next steps and continues to assist the company in commercial development and application of the technology into other company products.

Big Sky is a developer of commercial and developmental turn-key laser systems, as well as a provider of laser damage testing services. The company's laser systems are being used in medicine, ranging, imaging, artwork restoration, laser cleaning, remote sensing, environmental sciences, process control, spectroscopy and more, and have been used by NASA to track space shuttle and rocket launches.

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